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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

GRESO, AARON J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,910	Applicant(s) STROEKS ET AL.	
	Examiner AARON GRESO	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>06/14/2006 and 08/20/2009</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election Traverse

Applicant's election with traverse of the Office action dated 21 July 2009 in the reply filed on 20 August 2009 is acknowledged for election of Group I, Claims 1-8. In regard to the reference cited for the 35 U.S.C. 371 Restriction {*Cyr et al. (US 6455620)*}, the traversal is on the ground(s) that the polymer disclosed in the Claim amendment of 20 August 2009 the reference is not a substituted co-polymer of polypropylene oxide segments when the co-polymer instead comprises polyoxy-1,2-propanediyl segments; the co-polymer being the product of functionalized polyoxy-1,2-propanediyl segments.

This is not found persuasive because:

1) Polypropylene oxides are indicated to form polypropylene glycol materials that are also referred to as polyoxy-1,2-propanediyl {see informational reference: *INCI_Names page 6 lines item 36* [Http://surfatech.net/pdfs/INCI_Names.pdf](http://surfatech.net/pdfs/INCI_Names.pdf)}. Polymers comprising polyoxy-1,2-propanediyl chain segments would be expected to be identical to polymers to polymers comprising polypropylene oxide or polypropylene glycol segments; a co-polymer comprising polyoxy-1,2-propanediyl chain segments would be expected to be identical to co-polymers comprising polypropylene oxide or polypropylene glycol segments. These materials, except for the name, are indicated as a becoming a constituent that is part of a copolymer or being blended as part of a co-polymer with other co-polymerizing polymer types (*US 6455620 Abstract, col 7 lines 31-35, and lines 45-60*).

2) Polyalkylene oxide polymers, or pre-polymers, would be expected to be functionalized, or substituted with reactive groups, to enable chains to co-polymerize.

3) The reference indicates that substituted polyalkylene glycols having at least 4 carbon atoms {taken as being in the repeat group} are suitable (*US 6455620 col 3, lines 16-23*); the reference further indicates that polypropylene glycol co-polymers are used (*col 3 lines 45-54*).

The requirement is still deemed proper and is therefore made FINAL.

Examiner's Note:

The Claim Status's for non-elected Claims 9-15 are considered withdrawn; their current status identifier is incomplete: for those not elected, they are expected to indicate "(Withdrawn)"; see MPEP 714 (c). They are currently taken as withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 5 recites the limitation "wherein the polycondensate is absent" in determining the size of the spherical conglomerates having at most 300 nm for at most 25% of the polyoxy-1,2-propanediyl segments. There is insufficient antecedent basis for this limitation in the claim. The Claim 5 refers to a copolymer of instant Claim 1 comprising a polyoxy-1,2-propanediyl segments with other polymer segments. No polycondensate polymer is indicated in instant Claim 1 to exclude.

To further prosecution, it is the Examiner's position to consider any polymer composition comprising polyoxy-1,2-propanediyl segments with conglomerates {taken to mean "Spherulites"}.

Appropriate action is required.

1) Claims 9-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10 does not indicate the ASTM D3985 year version used. ASTM versions change {see *Cyr et al. US 6455620 col 16 lines 20-21*}.

Appropriate action is required.

To further prosecution, any version of ASTM D3985 is considered applicable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 8 are rejected under 35 U.S.C. 102(b) as being anticipated by *Cyr et al. (US 6455620)*.

Cyr et al. (Abstract) disclose compositions comprising an oxidation catalyst and polyethers that include substituted or unsubstituted, polyalkylene glycol copolymers and

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blends with other polymers (*col 2 lines 55-56*) including polycondensation polymers (*col 5 lines 10-13*).

As to Claims 1-4:

The polyalkylene glycols disclosed (*col 3 lines 16-55*) comprise polypropylene glycol {also known as polyoxy-1,2-propanediyl, see informational reference: *EP1878780, page 4 lines 13-14*} polymer segments (*col 3 lines 49-55*). The polyalkylene oxide material is indicated to comprise molecular weights from 500-5000; for a polypropylene unit of 60 g/mol $\{-\text{H}_6\text{C}_3\text{O}-\}$, this molecular weight corresponds to a unit number of about 9 to 90 units. The segments prior to reacting are expected comprise functional groups to enable co-polymerization (*col 8 lines 3-6 and col 3 lines 35-37*).

The polyalkylene glycol materials of C1-C3, which polypropylene glycol is included and is used for example (*Example 36 col 19*), are indicated to be present in the amount of at least 1% {taken as meaning from 1% to 100% (*col 3 lines 41-45*); the polymer comprising 99.99 weight percent of the total composition (*col 4 lines 66-67*)}; the polyalkylene component of a polycondensate copolymer may be up to 99 weight percent of a polyester/polyalkylene glycol polymer (*col 8 lines 6-8*); and is preferably present in the amount of 10-15% (*col 3 lines 44-45*).

When the above is taken with the reference's claim 28 (*col 22 lines 14-16*) and claim 1 (*col 19 lines 62-67 and col 20 lines 1-12*), indicating that the poly alkylene glycol comprises 10-15% of an oxygen scavenging composition comprising polycondensate

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polymers with copolymers of polyalkylene glycols and an oxidation catalyst, instant Claim 1 is further addressed.

Further as to Claims 1, 3-4:

In Example 36 (*col 19*), polypropylene oxide, or the polyoxy-1,2-propanediyl is reacted into a polyester chain and indicated to be present in the copolymer chain in an amount of about $100 \times (1.5/101.5)$ or 1.48%.

Further as to Claim 2:

Polyalkylene glycols, including polypolypylene glycol or polyoxy-1,2-propanediyl (*col 3 lines 16-55*), can be covalently bound to polyamides in the form of a co-polymer (*col 7 lines 20-22 and lines 31-34 and lines 55-56*); thermoplastic polymers for co-polymerization also comprise polyesters (*col 5 lines 10-13 and col 7 lines 49-50*); blends of polymers are indicated to comprise polyethylene terephthalate {PET}.

As to Claim 6:

Oxidation catalysts comprise transition metal salts (*col 4 lines 52-53*). Compositions (*col 14 lines 27-28*) are indicated to also comprise cobalt TEM-CEM {also known as cobalt neodecanoate, see informational reference *US 5811027 col 12 Formulas I, II, and III, lines 22-42*}); TEN-CEM is taken to represent a transition metal salt.

The reference discloses or inherently discloses the limitations for the applicable Claims above.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Cyr et al.* (US 6455620) as applied to Claims 1-4, 6 above.

Over a 25 day test, the reference discloses the result for one formulation was zero oxygen permeability (*Table 9 col 16*), when compared with the same samples comprising less polyalkylene glycol and less cobalt catalyst.

Although the reference indicates testing of films for oxygen permeability using ASTM D3985-81/1988 (*col 16 lines 19-42*), the reference does not indicate use of films having a thickness of 60 um or 0.060 mm; films of 125 um or 125 microns (*Example 37 col 19 lines 34-35 and col 16 line 50*) are employed; this is done by simply pressing the material within a 5 mill (0.005 in) thick frame or shim.

On the other hand, films can be pressed to thinner thicknesses by substitution of thinner shims, or press frames {Examiner's personal experience, University of Tennessee c. 1992} and this would be expected to be considered obvious by one of ordinary skill in the art at the time of the invention.

It is the Examiners position that the detected amount of oxygen permeability would be expected to be obviously influenced by the film thickness {see informational reference: *McCaig et al. Polymer vol 41 (2000) pp 629-637, page 636, last paragraph*}.

It is also the Examiners position that thickness and composition are result effective variables because changing them will clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that “discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize appropriate composition formulating and processing thickness, taught by the reference, including those within the scope of the present claims, so as to produce desired end results.

In accord with the case law above, it would have been obvious at the time of the invention, to one of ordinary skill in the art, to have used results effective variables, by employing common skill in the art for making thinner films and modifying as compositions with desired thickness, to achieve a product that would provide an acceptable oxygen permeation value in the proximity of zero, as taught by the value of reached by *Cyr et al.*

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Cyr et al.* (US 6455620) as applied to Claims 1-6, 7-8 above, and further in view of *Raff et al.* (Northwest Science Vol 44 no 3 pp 184-205 1970). [The analogous association of *Cyr et al.* and *Raff et al.* is based upon crystallinity and processing; *Raff et al.* teaching fundamentals directly related to crystalline polymer processing of *Cyr et al.*]

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Although the reference indicates that the polymers are *crystalline* (*Examples 18-19 col 15 lines 1-2, col 16 lines 15-16*), and the reference indicates methods upon which to crystallize the polymers, the reference does not further accentuate the size of the compositions' agglomerates {understood by the Examiner, from the instant Specification (page 6 lines 1-30), to be the same as polymeric "spherulites"}.

On the other hand, *Raff et al.* teaches that spherulite sizes affect gas permeability (*page 191 penultimate paragraph*) and polymers with spherulites have been structurally manipulated by using varying the temperature in preparation techniques {(*page 189, penultimate full paragraph, and last full paragraph*) and Examiner's personal experience, University of Tennessee c. 1992} as well as orientation preparation methods (*page 189 last paragraph to page 190 second full paragraph*). Such structures can be of pancake like shapes {see informational reference: *Franco et al. J. Polymer Science Part B Polymer Physics pp 1719-1726; p. 1725, Figure 6*}.

It is the Examiners position that polymer processing conditions and spherulite or conglomerate sizes are result effective variables because changing them will clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize appropriate polymer test structure orientation and processing temperatures,

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taught by the above references, including those within the scope of the present claims, so as to produce desired end results.

In accord with the case law above, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used results effective variables, such as processing temperature schedules and orientation methods, as taught by *Cyr et al.* and *Raff et al.* to achieve a product that would provide an acceptable and spherulite size as taught by and *Raff et al.*

Examiner Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AARON GRESO whose telephone number is (571)270-7337. The examiner can normally be reached on M-F 0730-1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James J. Seidleck/
Supervisory Patent Examiner, Art Unit 1796

AJG